NEWS REPORT

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An Aspect of the Promotion of Science*

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MR. President, Ladies, and Gentlemen, I wish to assure you, first of all, that the Royal Netherlands Academy of Sciences feels greatly honored by the invitation addressed to its President to attend the Annual Meeting of the National Academy of Sciences. The Netherlands Academy is proud that, when you decided to make it a tradition to have a foreign academy represented at your meeting—a tradition so admirably inaugurated last year by the President of The Royal Society—your thoughts went out to the Netherlands.

It seems probable that historical considerations were responsible for this. For I need not recall that my countrymen were among the first settlers in this continent, and some of these have either directly, or indirectly by their offspring, left their mark on American history. In a recent speech, Prince Bernhard of the Netherlands cited as an example Klaes Martensen van Roosevelt, a simple farmer of Holland's recently flooded province of Zeeland who arrived in the New World around 1650. Although little is known about this early settler, he became the common ancestor of seven presidents of the United States: James Madison, Martin van Buren, Zachary Taylor, Ulysses S. Grant, William H. Taft, Theodore Roosevelt, and Franklin D. Roosevelt. Altogether there is little doubt that there are nowadays millions of Americans who are at least partly of Dutch descent.

Now that I have used the word "Dutch," for the first time, I cannot refrain from making a short digression. Only about two months ago, the *New York Times* thought it fit to devote one of its topics to the use of the word "Dutch" in the English vocabulary. The article opened with the statement, "the adjective 'Dutch' generally has an opprobrious or uncomplimentary connotation," although, in its usual attempt at fairness, the *Times* did not omit to observe that, in a few combinations like "Dutch door," the adjective only denotes the origin of the prototype. The *Times* cited some ten expressions in order to give convincing documentation for its main thesis. My own daily paper commented on the article by remarking that this survey was far from complete: among others, the expression "to talk double Dutch" was badly missed. I cherish the hope that your abhorrence of this type of speech will make you more tolerant of my imperfect English!

It is far from my thoughts to dwell on this rather baffling use of the word "Dutch" by way of complaint. In the first place, the incriminating expressions are not of American origin; undoubtedly they are all British-coined and date from the far-off days when the relations between England and Holland were not always of a friendly nature, especially when a Dutch admiral sailed up the

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river Thames. Secondly, a rebuttal of the article of the *Times* would be quite out of place, because its tendency was to deplore the misuse of the word "Dutch" and, above all, because the article wound up with a strong recommendation to send contributions to the treasurer of the Holland Flood Relief at New York. May I seize this opportunity to express to you the profound gratitude of the Netherlands as a whole for the magnificent response American citizens have given to this appeal? In the midst of our deep consternation over the terrible disaster which struck a considerable part of our country, our hearts were warmed by the world-wide sympathy and the very material support given to us by the United States and many other countries as well.

I may not, however, dismiss the discussion of the word "Dutch" without mentioning here my recent discovery that there are combinations in which the word "Dutch" apparently has a positively favorable tenor. At least, I came to this conclusion on reading in the kind letter of invitation from your President the revelation of his "Dutch descent" without any allusion to a possible depreciatory character of this communication.

I hope my audience will forgive me this long digression which may only serve to explain that the pleasant surprise experienced by the Netherlands Academy on receiving your invitation was still enhanced by its contrast to the current evaluation of the word "Dutch" in colloquial English.

Having been invited to make a speech, I have, of course, meditated on the choice of a suitable subject. It is only natural that I at once felt a strong impulse to avow common ideals, for instance, by enlarging on the freedom of science or by stressing the social responsibility of the scientist. However, on second thought, I shrank from making topics of such a vital significance for the future of science the subject of a dinner speech. Moreover, in this connection, I was reminded of the following story:

It is said that one Sunday morning your taciturn President Coolidge, after having attended church, had the following conversation with his wife. Asked whether the sermon had been edifying, Coolidge answered that it had been fine. Not quite satisfied with this general appreciation, Mrs. Coolidge inquired into the purport of the sermon. Coolidge answered that it had dealt with sin. Somewhat exasperated, Mrs. Coolidge asked what the parson had said on the subject. Unhesitatingly Coolidge replied, "He was against it."

Now it seems to me that the situation is more or less analogous whenever a subject like the freedom of science is frankly discussed in circles of scientists. Here it will always be possible to summarize the discussion in the words, "They were for it," although this statement may not do justice to the often very evident differences in the interpretation of what this freedom implies.

I do not wish, however, to be misunderstood. Hence my explicit statement that the Netherlands scientists are fully aware of the grave dangers with which science is confronted nowadays and also that they intently follow your struggle with the clear realization that its outcome may ultimately also decide on their own fate.

Musing on another more suitable theme for my speech, it occurred to me that some reflections on the way of promoting science, this common aim of all academies, might be appropriate. The more so because this might give me the opportunity to include in my speech some remarks on a few Dutch scientists of international fame.

Promoters of science are used to thinking in terms of "brains and bricks," which slogan, of course, only finds its justification in the pleasant alliteration. Now I think that my audience will agree that providing with "brains" is a far more difficult problem than that with "bricks," and I shall, therefore, leave the latter aside. As for the "brains," it is evident that not every specimen of human brain will do, but that by the term "brains" is meant the type of brain fertile from the point of view of scientific discovery. Obviously, the primary condition for this type of brain is a well devised scientific education; but, although its product may be a scientist, there is no certainty that this scientist will belong to those who really extend the frontier of science. This leads to the question, "What are the characteristics of the truly successful scientist?"

In this connection, it is tempting to ask your attention for the views of an indis-

putable scientific genius, the first winner of the Nobel prize for chemistry, the Dutch chemist J. H. van't Hoff. Three quarters of a century ago, on being nominated to the chair of chemistry at the University of Amsterdam, van't Hoff delivered a remarkable inaugural address which bore the title of "Imagination in Science." Herein he gave a convincing documentation for his thesis that scientific progress has mainly been due to a strong power of imagination which acts as the driving force in the discoverer. He then concluded that this imagination would as a rule not be restricted to the scientific field but would also manifest itself in artistic talents, love of literature, poetry, romance, etc. He gave a preliminary analysis of the biographies of 200 famous scientists and showed that his hypothesis held true for a high percentage of these men. Of the numerous examples put forward by van't Hoff I shall cite only the following: One might expect that James Watt, the inventor of such a practical contraption as the steam engine, would have been a very levelheaded man. However, it is reported that, even as a boy, he gave convincing proof of an exceptionally imaginative mind. Once his parents boarded him out for some weeks in a friendly family. When his mother came to fetch him, his hostess said that she was glad to get rid of him. The trouble appeared to be that every night when bedtime was nearing, Watt started to tell pathetic or burlesque stories, one after the other. These tales were so enthralling that he kept the family awake for long hours with the final result that the next day everybody was dead tired.

Van't Hoff summarized his views on the way in which science progresses in the following quotation from Buckle: "There is a spiritual, a poetic, and, for aught we know, a spontaneous and uncaused element in the human mind, which ever and anon, suddenly and without warning, gives us a glimpse and a forecast of the future and urges us to seize truth as it were by anticipation."

In a recent paper by Professor Bernard Cohen of Harvard University, I found the same conviction of the importance of imagination for scientific progress. I need only cite his statement: "After all, to those who make the most intelligent scientific guesses we give Nobel prizes."

What then is this mysterious process of guessing? You may perhaps forgive a microbiologist the fact that he is inclined to draw a parallel with the equally mysterious process of spontaneous mutation, which remarkable phenomenon is nowadays nowhere so notable as in the microbe world. There can be no doubt that in a sufficiently dense clone of certain bacterial strains perpetually forms of life arise which in their properties clearly differ from the single cell which was the starting point of the clone. Among others, these differences may manifest themselves in an unusual resistance to growth inhibitors such as antibiotics, chemotherapeutics, bacteriophage, etc. The main point in all this is, however, that the rise of such a mutant is fully independent of the presence of the inhibitor in the cell's environment, implying that in a clone of sufficient dimensions thousands of mutations are continuously taking place. But all the resulting mutants are doomed to sterility, except the one which quite accidentally fits the environment. This throws a clear light on one of the most remarkable properties of life which might be paraphrased as its "trial and error" character.

It is tempting to apply this point of view also to the process of guessing. We should then accept that each scientist has a certain intellectual and mental structure and we could consider his guesses as mental mutations. By far, the majority of these guesses will remain sterile and vanish, while one guess fitting the scientific environment might stay and mean scientific progress, possibly create a new Nobel laureate. Now it is well known that the mutability of various strains belonging to one and the same bacterial species may vary considerably, and it seems likely that the same will hold good for the mental mutability of the brains of various individuals.

It follows that the task of a promotor of science should be to look out for persons with a marked mental mutability, to try to make them go in for a scientific career, and, above all, to create suitable conditions for their survival as scientists.

Such a program is certainly not easily accomplished, and I shall not consider its

initial stages here but limit my attention to the third phase, which involves a selection of those scientists worthy of special consideration from the point of view of scientific progress.

I then start with a recent appraisal of the scientist by A. V. Hill, who writes: "I do not believe that there is such a thing as the scientific mind. Most scientists are quite ordinary folk, with ordinary human virtues, weaknesses, and emotions. A few of the most eminent ones are people of superlative general ability, who could have done many things well; a few are freaks, with a freakish capacity and intuition in their special fields but an extreme naiveté in general affairs. . . ." Now, it does not seem doubtful that the scientists who are in the first place responsible for the progress of science belong either to the type with "the superlative ability" or to "the freakish category." Nobody will have any difficulty finding characteristic examples of either of the two groups. For me, the outstanding representative of the superlatively able group is H. A. Lorentz, the famous physicist, so well known for his theory of electrons and his contraction theory which initiated the relativistic age in physics. Characteristic of Lorentz was his perfectly harmonious nature which enabled him to deal with equal facility with highly abstract and eminently practical problems. It is not generally known that he devoted himself for almost ten years to the solution of problems connected with the subsequent so successfully accomplished reclamation of the Zuiderzee. But, in addition, he was a master in "handling" men. As President of our Academy, he has remained unsurpassed, but he scored his main triumphs in international scientific meetings. Accordingly, at the end of his career, he was president of the League of Nations Committee on Intellectual Cooperation, the precursor of UNESCO.

You, as Americans, will probably be inclined to think in this connection of the eminent chemist who now holds the very important post of High Commissioner in West Germany, but many other examples could be given as well.

It will be superfluous to remark that scientists like Lorentz and Conant are not in need of any support from anybody; they are fully qualified to look after themselves!

However, things seem different for Hill's second category of supernormally gifted scientists whom he designates as the freakish type. Now the word "freakish" has to my ear a somewhat disreputable sound. It is quite possible that I am mistaken in this and that it is only due to my imperfect command of the English idiom. Anyhow I should prefer to call this category, with Ostwald, the romantic type, for any disparagement seems misplaced in view of the huge debt which science owes to scientists of this type.

It is evident that to this category belong the scientists whose imagination and artistic sense markedly surpass the average, the type for which van't Hoff in his inaugural address mentioned no less than fifty-two names, all men of well established scientific fame.

Usually these romantic scientists are passionate researchers, often possessed by a true craving for knowledge, which, however, may suddenly subside, the energy of the scientist being directed to other fields of activity. Their mental mutability is apparently highly developed, and, as in the great artists, from time to time instants of genius occur leading to the "successful guess." But, as Hill has rightly stressed, they are often marked by an extreme naiveté in general affairs which means that in human society they are exceedingly vulnerable. Here, then, is an obvious task for the scientific promotor: firstly, make conditions such that the persons in question stick to the scientific field; secondly, protect them from adverse conditions emanating from society.

It may be illuminating to pass here in review some passages from the life histories of some successful scientists of the romantic type. This will enable me at the same time to show that, even in the Dutch nation, usually renowned for its soberness of mind, sometimes such scientists arise.

There can be no doubt that van't Hoff himself too belongs to the romantic type. In this respect, it is noteworthy that his first publication appeared when, at the age of 22, he worked at the German University

of Bonn under Kekulé's direction. It is remarkable that this publication should consist of four pages of English (!) poetry bearing the title "Elegy on the Death of a Lady Student at Bonn." The fact that, at that time, an edition of the collected poems of Lord Byron was the favorite book in his library throws some light on this unexpected emotional outburst.

But in the same year, after having returned to Holland, he wrote—and had privately printed—the brilliant pamphlet which made him the founder of stereochemistry. I shall not dwell on van't Hoff's further career; it may suffice to state that several circumstances have exerted a stabilizing influence on his devotion to science.

A second example of a typical romantic scientist is my famous predecessor in the chair of microbiology at Delft, M. W. Beijerinck. Those among you who are acquainted with the six volumes of his collected papers will agree that he was one of the truly great microbiologists of all times. He was the first to bring convincing proof for the bacterial nature of the agent responsible for the formation of the root nodules of leguminous plants. It is well known that this work has had enormous beneficial consequences for agriculture, and the same holds, albeit to a somewhat lesser degree, for his discovery and isolation of the aerobic nitrogen-fixing bacterium *Azotobacter chroococcum*. Symptomatic for Beijerinck's boundless devotion to science is the fact that the latter discovery was made (as appears from his diary) in 1900 on New Year's Eve, *i.e.*, at a time when the thoughts of ordinary people are accustomed to wander in other spheres.

On the other hand, Beijerinck was a perfect example for the naiveté signalized by Hill. Perhaps I can make this at once tangible by quoting from his biography two of his statements. The first runs as follows: "A man of science does not marry." The second was an observation on one of his colleagues: "Mr. So and So gets old, he attends concerts." It is interesting to trace which factors enabled Beijerinck to survive as a scientist. In 1895, some influential friends and admirers succeeded in inducing the Netherlands Government to erect for Beijerinck a special laboratory at Delft, the first biological institution at any institute of technology in the world. The new chair did not imply any obligatory courses for students, and so Beijerinck managed to lead a protected life for more than a quarter of a century. In a certain period, he was not far from considering his students as mere intruders. It is said that he used to ask them all the same question: "Are you interested in applied microbiology, such as fermentation industries?" Independently of an affirmative or a negative reply, Beijerinck's retort invariably was: "Then I have no use for you!" It should be added that the dogged individuals who were not frightened by this reception managed to get in, and, if in addition they gave proof of a serious scientific interest, they were soon introduced into Beijerinck's astoundingly rich spiritual world.

Finally, I should like to dwell for a short moment on the life of one other great microbiologist, *viz.*, on that of Sergius Winogradsky, who died only some months ago at the age of 96. Any one who has read the splendid biography which Dr. Waksman has devoted to the famous Russian investigator will realize that there were many risks that Winogradsky would have been lost for science. Starting as a law student in Kiev, he soon changed to the natural sciences but left these too in order to study music at the Conservatoire at St. Petersburg. Two years later, he fortunately returned to biology and, under the influence of some eminent teachers, he became deeply interested in the microbe world. Some ten years later, there followed his now classical investigations on autotrophy which added a brand-new chapter to general physiology. This flourishing period in Winogradsky's scientific career was followed by a gradual decline in scientific activity for which troublesome administrative duties may well have been mainly responsible. Being a man of independent means, Winogradsky, in his late forties, decided to retire from the scientific field. He settled permanently on one of his large estates in southern Russia and centered his attention on the practical problems of farm management. He also re-

turned to his old love—the violin—and spent long holidays in Switzerland. Apparently Winogradsky was a total loss for science. Then, in 1918, the Revolution came; Winogradsky fled and, after various wanderings, the sixty-six-year old "displaced person" arrived in Paris in 1922, where Dr. Roux, the director of the Pasteur Institute, had the happy foresight to offer him the direction of a new division for soil microbiology. The offer was gladly accepted, and this led to the most remarkable result that, in the period 1922–40, a stream of publications appeared which all were written by an aged scientist who for about two decades had evaded the world of science. Nevertheless, these publications revolutionized the science of soil microbiology!

Mr. President, Ladies, and Gentlemen, I have given you some glimpses of three scientists of the romantic type, and all three stories had a happy ending as judged from the point of view of science. It should, however, be realized that, without a happy ending, there might have been no story at all; or, in other words, it seems quite possible that often potential van't Hoffs, Beijerincks, and Winogradskys vanish from the scene in such early stages of their scientific development that their disappearance is scarcely noted.

My first conclusion is, therefore, that we should all be on the lookout for supernormally gifted scientists. If they are of the superlatively able type, we can leave them to themselves. But—and this is my second conclusion—if they are of the romantic type, we should ask ourselves what can be done to stabilize their scientific inclinations and to further their careers.

The first impulse may be to offer them a chair at one of our universities. But here I should like to sound a warning note, which is partly induced by the recent statement on the "Rights and Responsibilities of Universities and Their Faculties" by the Association of American Universities. It appears to me that this report admirably formulates the creed of the majority of the American scientists as far as the subject of academic freedom is concerned. It is obvious that, also in this report, high demands are made on the mental and ethical structure of the individual faculty members. This point has also been especially considered by Professor Hildebrand in his excellent article on "The Professor and His Public." Anyone will agree with his conclusion that "the public will not accept the claim that academic freedom exempts a man from responsibility to be a decent citizen." At some other place, Professor Hildebrand explicitly denies the professor the right to be a fool; and again we admit that this is a rightful demand to be made on a university professor, who also has an educational task. But, may we ask the same from a highly gifted scientist of the romantic type? If we remember his "extreme naiveté in general affairs," I am inclined to answer the question in the negative. This implies that, in view of the indispensability of scientists of the romantic type for the progress of science, very real interests of science will be served, if we can put these scientists at more or less isolated research posts. We should, of course, not give our scientists a license to behave as "indecent citizens," but, in their infinite worship of science, they should have freedom to ignore citizenship.

It is not the place here to discuss the practical realization of the outlined principle. Suffice it to state that there should be more institutions like your Institute for Advanced Studies at Princeton, more research professorships or fellowships like those sponsored by The Royal Society. Science cannot afford to let scientific geniuses perish, simply because they do not fit the social environment indissolubly connected with the academic teacher.

All the foregoing superficial considerations should, however, not keep me from the main part of my task for tonight. For this can be nothing but to convey a message of friendship, gratitude, and admiration from the Netherlands scientists—and more especially from the members of the Royal Netherlands Academy of Sciences—to the American scientists, of whom my audience is such a brilliant representation.

SCIENCE NEWS

ANNUAL MEETING NATIONAL ACADEMY OF SCIENCES

The National Academy of Sciences held its ninetieth annual meeting at the Academy–Research Council building on April 27, 28, and 29. A full and varied program was arranged for the two hundred and thirty-three members and one foreign associate of the Academy who registered.

On Monday, April 27, two scientific sessions were held, principally in the biological and medical sciences. Seventeen contributed papers were presented. During ceremonies that evening, Academy medals were awarded to H. W. Harvey of the Marine Biological Association, Plymouth, England; to Arthur Cleveland Bent, Collaborator, Smithsonian Institution; to Lloyd William Stephenson, U. S. Geological Survey; to Franco Rasetti, The Johns Hopkins University; and to Alfred Newton Richards of the University of Pennsylvania and former President of the Academy (for full statement on medal awards, see March–April issue of NEWS REPORT). Dr. Harvey and Dr. Bent were unable to be present and received their awards *in absentia*. Dr. Stephenson, Dr. Rasetti, and Dr. Richards each gave a brief address describing pertinent phases of their work. The presentation ceremony was followed by a reception at which members of the Academy and their guests had an opportunity to meet the medalists.

A new feature of this year's meeting was a program designed to present noteworthy recent advances in science and technology having a substantial measure of general interest. A dozen demonstrations and exhibits, gathered together through the energetic cooperation of various Academy members and their colleagues, laboratories, and institutions, were on display to members, their guests, and the public during the reception for the medalists.

On Tuesday, April 28, Academy members met in business session to receive reports, to elect officers and new members, and to take action on several matters of importance to science. At the close of the business meeting, "open-house" conferences, during which members of the Sections of the Academy met with the chairmen and executive officials of related divisions of the Research Council, were held.

An excursion to Annapolis, including a tour of the Naval Academy, was arranged for the guests of Academy members Tuesday morning. After luncheon and a visit to some of the historical houses of Annapolis, the group was received at the Governor's mansion by Mrs. McKeldin, the wife of the Governor of Maryland.

The President's reception and the annual dinner took place Tuesday evening. Albert Jan Kluyver, President of the Royal Netherlands Academy of Sciences, and Justice Owen Roberts, President of the American Philosophical Society, were guests-of-honor. This continued the custom of representation of distinguished sister academies which was initiated last year when E. D. Adrian, President of The Royal Society of London, was guest-of-honor at the annual dinner. Justice Roberts and Dr. Kluyver addressed the assembled members and their guests after dinner.

Wednesday, April 29, saw the resumption of scientific sessions, with twenty-one contributed papers in the physical sciences and mathematics, and two notable symposia. In the morning, there were five speakers in a symposium on problems of development and growth, while, in the afternoon, eight scientific leaders from Australia, the Netherlands, the United Kingdom, and the United States took part in a symposium in the rapidly evolving field of radio astronomy.

On Wednesday morning, the officers, Council members, and Section chairmen of the Academy visited the White House at the invitation of President Eisenhower and enjoyed an informal chat with the President.

A buffet supper and informal discussion of Academy matters on Wednesday evening completed the three-day meeting.

ELECTION OF OFFICERS AND MEMBERS NATIONAL ACADEMY OF SCIENCES

At the annual business meeting of the Academy on April 28, George W. Corner, Carnegie Institution of Washington, was elected Vice-President for a four-year term ending June 30, 1957. Edwin B. Wilson, retiring Vice-President, and Hugh L. Dryden, Chairman of the National Advisory Committee for Aeronautics, were elected to membership on the Council of the Academy to serve until June 30, 1956. Dr. Wilson and Dr. Dryden will replace Oliver E. Buckley, Bell Telephone Laboratories, and Walter S. Hunter, Brown University, who will complete their three-year terms on the Council on June 30, 1953.

The following members and foreign associates were elected:

New Members of the Academy

Lars Valerian Ahlfors, Professor of Mathematics, Harvard University.

Percival Bailey, Professor of Neurology and Neurosurgery, University of Illinois School of Medicine.

Horace Albert Barker, Microbiologist, University of California.

Victor Hugo Benioff, Professor of Geophysics, California Institute of Technology.

Joseph Hall Bodine, Professor of Zoology, University of Iowa.

Leon Brillouin, Director of Electronics Education, International Business Machines Corporation.

Martin Julian Buerger, Professor of Mineralogy and Crystallography, Massachusetts Institute of Technology.

Herbert Edmund Carter, Professor of Biochemistry, University of Illinois.

Jacob Pieter Den Hartog, Professor of Mechanical Engineering, Massachusetts Institute of Technology.

David Mathias Dennison, Professor of Physics, University of Michigan.

Jesse William Monroe DuMond, Professor of Physics, California Institute of Technology.

Carl Eckart, Director of Marine Physical Laboratory, University of California.

Robert Emerson, Research Professor in Botany, University of Illinois.

John Franklin Enders, Chief, Division of Infectious Diseases, Children's Hospital, Boston.

Paul John Flory, Professor of Chemistry, Cornell University.

George Gamow, Professor of Theoretical Physics, George Washington University.

Viktor Hamburger, Professor of Zoology, Washington University.

Carl Einar Hille, Professor of Mathematics, Yale University.

Joseph Oakland Hirschfelder, Professor of Chemistry, University of Wisconsin.

James Gordon Horsfall, Director, Connecticut Agricultural Experiment Station, New Haven.

Edwin Herbert Land, President, Polaroid Corporation, Cambridge, Mass.

David Pierce Caradoc Lloyd, Member, Rockefeller Institute for Medical Research, New York City.

Henry W. Nissen, Associate Director, Yerkes Laboratories of Primate Biology, Orange Park, Fla.

David Rittenberg, Associate Professor of Biochemistry, Columbia University.

John Frank Schairer, Physical Chemist, Geophysical Laboratory, Carnegie Institution.

Theodore Shedlovsky, Member, Rockefeller Institute for Medical Research, New York City.

Jabez Curry Street, Professor of Physics, Harvard University.

Max Tishler, Director, Development Research Department, Merck and Company, Inc., Rahway, N. J.

Harland Goff Wood, Head of Department of Biochemistry, Western Reserve University.

Robert Burns Woodward, Professor of Chemistry, Harvard University.

Foreign Associates

Jan Hendrik Oort, Director, Observatory of Leiden, Leiden, Netherlands.

Wilder Penfield, Professor of Neurology and Neurosurgery, McGill University, and Director, Montreal Neurological Institute, Montreal, Canada.

ACADEMY–COUNCIL LECTURE SERIES

On Tuesday, April 21, Franz Eugen Simon, professor of thermodynamics at the Clarendon Laboratory, Oxford University, England, delivered the fifth lecture in the current series. Dr. Simon chose as his topic "The Absolute Zero of Temperature." Tea was served in the auditorium following the lecture.

SCIENCE SERVICE

Leonard Carmichael, Secretary of the Smithsonian Institution, has accepted appointment as a National Research Council representative on the Board of Trustees of Science Service. Dr. Carmichael replaces Alexander Wetmore, Home Secretary of the National Academy of Sciences and former Secretary of the Smithsonian Institution, who has served on the Board since 1947. Other representatives of the National Research Council on the Board are Ross G. Harrison of Yale University and Duane Roller of Wabash College.

NEWS FROM THE AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

The annual meeting of biological societies sponsored by the American Institute of Biological Sciences (AIBS) will be held at the University of Wisconsin, September 6–10. The following societies will meet: American Bryological Society, American Fern Association, American Microscopical Society, American Phytopathological Society, American Society for Horticultural Science, American Society of Limnology and Oceanography, American Society of Naturalists, American Society of Parasitologists, American Society of Plant Physiologists, American Society of Plant Taxonomists, Biometric Society (Eastern North American Region), Botanical Society of America, Ecological Society of America, Mycological Society of America, Phycological Society of America, Potato Association of America, Sigma Delta Epsilon, Society for Industrial Microbiology, Society of Protozoologists, Society for the Study of Evolution.

A symposium on "Biology and Industry," sponsored by the AIBS Associates Committee, will be held at the Madison meeting. Subjects and speakers include the following: "The Impact of Chemistry on Modern Agriculture," by Francis J. Curtis, Vice-President of the Monsanto Chemical Company; "Biological Aspects of the Tobacco Industry," by C. J. Nussbaum, Plant Pathologist, North Carolina State College; and "Industrial Applications of Microbiology," by Asger F. Langlykke, Director of Research of the Squibb Institute for Medical Research.

New members of the AIBS approved by the Governing Board of the Institute at its meeting on April 23 include the following: *Affiliates*—American Association of Anatomists, American Genetic Association, Association of Southeastern Biologists, and Potato Association of America; *Associates*—Associated Seed Growers, Inc., Difco Laboratories, F. H. Woodruff & Sons, Inc., General Biological Supply House, Lilly Research Laboratories, and the Upjohn Company. Current AIBS membership now includes seventeen member societies, ten affiliate societies, and eighteen associates.

The following officers of the AIBS have been elected to take office July 1, 1953: T. C. Byerly, U. S. Department of Agriculture, *Chairman;* J. C. Walker, University of Wisconsin, *Vice-Chairman;* Ralph E. Cleland, Indiana University, and Walter N. Hess, Hamilton College, *members of the Executive Committee.* J. S. Nicholas of Yale University continues as a member of the Executive Committee.

CONFERENCE ON MITOGENESIS AND MORPHOGENESIS

The University of Texas was host to a Conference on Mitogenesis and Morphogenesis, held March 17–19, under the sponsorship of the Committee on Developmental Biology of the Division of Biology and Agriculture. This was one of a series of conferences called by the Committee to explore underdeveloped aspects of developmental biology and to focus attention on the desirability of interdisciplinary cooperation.

The discussions, keynoted and moderated by the Chairman, Paul Weiss, centered upon the relations between growth, synthesis of protoplasm, nuclear and cell divisions, physical and chemical prerequisites (energy, food, stimulants, inhibitors, etc.), and the bearing of time and space patterns of cell division on the development of form. The meeting disclosed numerous points of contact as well as incongruities between the various approaches hitherto pursued separately and engendered many new ideas for reconcilation of views, novel experimental courses, and conceptual clarification of the problems of morphogenesis.

The thirty-four participants, including the members of the Committee on Developmental Biology, represented such widely diverse fields as agriculture, biochemistry, botany, cancer research, cytology, embryology, endocrinology, experimental morphology, genetics, microbiology, pathology, and radiology. W. S. Bullough, professor of zoology, at the University of London, England, and Hans Lettré, Director of the Institute for Experimental Cancer Research, University of Heidelberg, Germany, also participated in the conference.

CONFERENCE ON BIOLOGICAL EDUCATION

A Conference on Biological Education was held at the National Academy of Sciences–National Research Council on March 10 under the chairmanship of Leonard Carmichael, Secretary of the Smithsonian Institution.

The Conference covered the following topics: sources of information on biological education, agencies concerned with educational problems in biology, objectives of biological education, the adjustments in biological education required to meet changing trends in biological thought, and problems of manpower and recruitment in the biological sciences.

The following participated in the Conference: John Behnke, American Association for Advancement of Science; Ralph E. Cleland, Indiana University; Merle Coulter, University of Chicago; R. W. Gerard, Illinois Neuropsychiatric Institute; David R. Goddard, University of Pensylvania; Ernest V. Hollis and Phillip Johnson, U. S. Office of Education; Samuel L. Meyer, George Nace, and M. C. Winternitz, National Research Council; Fernandus Payne, National Science Foundation; Howard M. Phillips, Emory University; Paul Weiss, University of Chicago; and Walter J. Wilson, Brown University.

CONFERENCE ON AREA RESEARCH IN CONTEMPORARY AFRICA

The National Research Council and the Social Science Research Council will jointly sponsor a conference on the relationship of current scientific knowledge to the major problems facing man in Africa today. The conference will be held at Princeton University, October 15–17, 1953. Arrangements have been developed in consultation with the Carnegie Corporation of New York, which is supporting the conference by a grant to the National Academy of Sciences.

To prepare for the conference, a joint planning committee has been appointed. William Hance of the Department of Geography at Columbia University, Bryce Wood of the Social Science Research Council staff, and Roland Young of the Department of Government at Northwestern University will represent the Social Science Research Council on this committee; William R. Bascom of the Department of Anthropology at Northwestern University, William N. Fenton of the National Research Council staff (Dr. Fenton is Executive Secretary of the Division of Anthropology and Psychology), and George Peter Murdock of the Department of Anthropology at Yale University will represent the National Research Council. The planning group designated Dr. Fenton as its chairman and invited L. Gray Cowan, Assistant Director of the School of International Affairs at Columbia University, to serve as executive secretary and to manage the conference.

Stability and change in African society has been chosen as the theme of the conference. The program calls for the preparation of background papers on a series of closely related topics ranging from land tenure to religious sanctions behind the law. These will be written by persons who are actively engaged in African field research and will be circulated in advance of the conference. The program should provide an inventory of the present state of African research in American universities and point up problems on which additional research is needed.

OPERATIONS RESEARCH IN HIGHWAY SAFETY

The Committee on Highway Safety Research of the National Research Council authorized the appointment of a subcommittee to stimulate studies of the causes of accidents on high-speed highways by means of "operations research" techniques. This action resulted from one of the recommendations of the June, 1952 Highway Safety Research Correlation Conference and of a special Subcommittee on Research Area Priorities.

Accordingly, a Subcommittee on Operations Research in Highway Safety has been appointed which will be available to advise financial sponsors and research organizations. At its first meeting on April 30, the Subcommittee discussed the broad outlines of a pilot study of accidents which would be conducted first on a modest scale in order to develop appropriate applications

of "operations research" techniques and to evaluate the contributions which can be made. Favorable results from such a study would, it was felt, indicate the value of an expanded program.

The Chairman of the Subcommittee is H. C. Levinson, Consultant on Operations Research. Taylor Lewis, associate professor of highway engineering at Cornell University, is Vice-Chairman. The members of the Subcommittee are the following: J. Stannard Baker, Northwestern University Traffic Institute; Hugh De Haven, Cornell Medical College; Harold A. Edgerton, Richardson, Bellows, Henry & Company, Inc.; Carney Landis, New York State Psychiatric Institute; and Arnold H. Vey, State of New Jersey Bureau of Traffic Safety.

CONFERENCE ON WATER RESOURCES

A feature of the annual meeting of the Division of Geology and Geography, held in Washington, May 1 and 2, was a conference on "Our Water Resources," under the chairmanship of Richard J. Russell, Vice-Chairman of the Division. No formal program was announced for the conference, but discussants were alerted in advance to provide brief remarks on critical phases of the theme. Vigorous discussion among the more than fifty geographers, geologists, and geophysicists present followed each presentation.

Participants in the conference included the following: C. W. Thornthwaite (The Johns Hopkins University), who spoke on water availability, water need, water disposal, and some of the implications from new observations made at Seabrook, N. J., in connection with large-scale agriculture; Abel Wolman (The Johns Hopkins University), who presented a consideration of some special problems of management and administration relating to water reuse problems; Joseph F. Poland (U. S. Geological Survey, Sacramento), on water resource problems in California; S. W. Lohman (U. S. Geological Survey, Denver), on water problems in the high plains and borderland areas; Luna B. Leopold (U. S. Geological Survey, Washington, D. C.), on the relationship between stream flow and transport, water availability, and sedimentation in arid and other regions, with special application in New Mexico; Paul H. Jones (U. S. Geological Survey, Philadelphia), on Gulf coastal water; Harold E. Thomas (U. S. Geological Survey, Salt Lake City), on Western water law and its implications on water use and appropriation; A. N. Sayre (U. S. Geological Survey, Washington, D. C.), who summarized the remarks on ground water; and Walter M. Kollmorgen (University of Kansas), who commented on the conference from the viewpoint of an economic geographer.

FELLOWSHIP PROGRAMS

AWARD OF FELLOWSHIPS IN CANCER RESEARCH

Upon recommendation of the Section on Fellowships and of the Executive Committee of the National Research Council Committee on Growth, the American Cancer Society has awarded forty-nine fellowships in cancer research for the period 1953–54. Three of these fellowships are British-American exchange fellowships. Recipients of the fellowships will study in twenty-six different institutions in the United States and in six foreign countries.

The following list of American Cancer Society fellows indicates the institution from which the appointees received the doctorate as well as the nature and location of their fellowship research:

Richard S. Benua (M.D., Johns Hopkins University, 1946)
Study of the functional nature of thyroid tissues with special emphasis upon thyroid tumors and radioiodine—Western Reserve University, with Brown M. Dobyns.

Paul Berg (Ph.D., Western Reserve University, 1952)
Enzymatic studies on the formation of the phosphate diester bond—Washington University, with Arthur Kornberg.

Sidney A. Bernhard (Ph.D., Columbia University, 1951)
Biological specificity in enzyme systems: an experimental approach—Columbia University, with David Nachmansohn.

David P. Bloch (Ph.D., University of Wisconsin, 1952)
Studies on the relationships between the syntheses of desoxyribonucleic and nuclear proteins during the mitotic cycle—Columbia University, with Arthur Pollister and Margaret Murray.

Robert A. Bonar (Ph.D., University of California, 1953)
Studies on the isolation and analysis of the nucleoproteins of yeast—University of California, with Wendell H. Griffith.

William T. Burke, Jr. (Ph.D., University of Rochester, 1953)
A study of the relationship between nucleic acid turnover and protein synthesis in the rat liver—University of Rochester, with Leon Miller.

George B. Chapman (Ph.D., Princeton University, 1953)
Cytological studies of selected bacterial species using the techniques of ultrathin sectioning and electron microscopy—Princeton University, with James Hillier.

Morris Cohen (Ph.D., University of California, 1951)
An electron microscope study of *1*) intracellular morphogenesis in both healthy and TMV-infected tobacco leaves, *2*) intracellular sites and the visualization of virus synthesis, and *3*) enzymatically and solvent-degraded ultrathin tobacco-leaf sections for *in situ* biochemical characterization of intracellular organelles—University of California, with Sam G. Wildman.

Betty Danes (Ph.D., State University of Iowa, 1952)
Interrelationships between cellular respiration and cell growth in tissue culture—Carlsberg Laboratory, Copenhagen, Denmark, with Heinz Holter.

Jack D. Davidson (M.D., College of Physicians and Surgeons, 1943)
The effect of chemotherapeutic agents upon nucleic acid turnover in tumors—Delafield Hospital, New York City, with Alfred Gellhorn.

Harold M. Davidson (Ph.D., University of Oregon, 1951)
1) Studies on the metabolism of phosphoproteins and *2*) the purification and properties of prostatic acid phosphatase—Tufts College Medical School, with Gerhard Schmidt and William H. Fishman.

Patricia Y. Dowmont (Ph.D., Yale University, 1952)
The enzymatic degradation of yeast triose phosphate dehydrogenase—University of Washington, with Hans Neurath.

John E. Fitzgerald (M.D., College of Physicians and Surgeons, 1950)
Protein fiber formation—Masschusetts Institute of Technology, with Francis O. Schmitt.

Murray Freidman (Ph.D., Yale University, 1953)
The influence of multiple hosts on virus synthesis—Yale University, with Ernest C. Pollard.

Norbert Freinkel (M.D., New York University, 1949)
Iodide accumulation in tissue slices—Boston City Hospital, with William B. Castle.

Jay J. Gold (M.D., Long Island College of Medicine, 1950)
Steroidal patterns in adrenal virilism before and after treatment with cortisone—College of Physicians and Surgeons, with Joseph W. Jailer.

Robert D. Griesemer (M.D., Harvard Medical School, 1943)
Respiratory enzymes of the epidermis—Harvard Medical School, with Chester N. Frazier.

Euclid M. Hanbury, Jr. (M.D., University of Virginia, 1952)
The effect of thyroid stimulating hormone (TSH) on lipid metabolism—Sloan Kettering Institute, New York City, with Rulon W. Rawson and J. E. Rall.

Isaac M. Harary (Ph.D., New York University, 1953)
Synthesis of amino acids—University of Chicago, with Konrad Bloch.

Ella S. Haugaard (Ph.D., University of Pennsylvania, 1952)
The initial breakdown of crystalline proteins by trypsin — Carlsberg Laboratory, Copenhagen, Denmark, with Kaj Linderstrøm-Lang.

Robert B. Hurlbert (Ph.D., University of Wisconsin, 1952)
Mechanisms involved in the biosynthesis of nucleic acids—Karolinska Institute, Stockholm, Sweden, with Einar Hammarsten.

Jerard Hurwitz (Ph.D., Western Reserve University, 1953)
Study of protein synthesis and protein structure —National Institute for Medical Research, London, England, with A. Neuberger.

Mary Ellen Jones (Ph.D., Yale University, 1951)
Properties of the intermediate of the adenosine triphosphate-coenzyme A-acetate reaction—Massachusetts General Hospital, with Fritz Lipmann.

Raymond H. Kahn (Ph.D., University of California, 1953)
The effects of vitamin A and estrogen on organ cultures of mammalian vaginal epithelium and its metabolism *in vitro*—Strangeways Laboratory, Cambridge, England, with Honor B. Fell.

John P. Kaltenbach (Ph.D., State University of Iowa, 1950)
The biochemical investigation of *whole* normal and ascites tumor cells—Karolinska Institute, Stockholm, Sweden, with T. Caspersson and G. Klein.

Attallah Kappas (M.D., University of Chicago, 1950)
Steroid metabolism in cancer—Sloan Kettering Institute, New York City, with Thomas F. Gallagher.

Milton Kern (Ph.D., Yale University, September 1953)
A study of propionate formation in cell-free extracts of propionibacterium—Johns Hopkins University, with Sidney P. Colowick.

Joe R. Kimmel (M.D., Johns Hopkins University, 1947)
A study of the specificity and kinetic properties of proteinases (papain and chymopapain) which are activated by sulfhydryl groups—University of Utah, with Emil L. Smith.

Roman J. Kutsky (Ph.D., University of California, 1953)
Studies of nucleoproteins active in nutrition of tissue cultures—University of Toronto, Toronto, Canada, with Raymond C. Parker.

Aaron J. Ladman (Ph.D., University of Indiana, 1952)
Histochemical studies of the anterior pituitary gland in inbred mice and rats, under normal and experimental conditions—Harvard Medical School, with George B. Wislocki.

Karl G. Lark (Ph.D., New York University, 1953)
The use of a nutritionally deficient host to determine the relationship between viral protein and nucleic acid synthesis—State Serum Institute, Copenhagen, Denmark, with Ole Maaloe.

Myron Levine (Ph.D., University of Indiana, 1952)
Biochemical and genetic studies on *paramecium aurelia*—Johns Hopkins University, with W. D. McElroy.

William S. Lynn, Jr. (M.D., College of Physicians and Surgeons, 1946)
A study of a water-soluble enzyme system from pigeon liver capable of synthesizing long-chain fatty acids from acetate—University of Pennsylvania, with Sam Gurin.

Harold M. Malkin (M.D., University of Chicago, 1951)
The relative effects of the nucleus and cytoplasm on the syntheses of ribonucleic acid and protein in the sea urchin cell—University of Brussels, Brussels, Belgium, with Jean Brachet.

Julius Marmur (Ph.D., Iowa State College, 1951)
Biochemical alterations involved in the process of bacterial transformation—Rockefeller Institute for Medical Research, with Rollin D. Hotchkiss.

Gordon R. McKinney (Ph.D., Duke University, 1951)
Effects of chemical and radiant energy on the metabolism of human bone marrow, normal and abnormal—Duke University, with R. Wayne Rundles.

Marc P. Moldawer (M.D., Harvard Medical School, 1950)
Studies in metabolism with particular reference to problems of growth—Massachusetts General Hospital, with Fuller Albright.

Moreshwar V. Nadkarni (Ph.D., University of Iowa, 1949)
A study of the metabolism of selected tumor-inhibiting compounds, tagged with radiocarbon, as a background to their clinical use—George Washington University, with Paul K. Smith.

Robert E. Parks (M.D., Harvard Medical School, 1945)
Training in enzyme research leading to a Ph.D. in Biochemistry—University of Wisconsin, with Henry A. Lardy.

William B. Patterson (M.D., Harvard Medical School, 1950)
Tumor cell growth and host resistance, and introductory experience in concepts and technique of biological research in cancer—New England Deaconess Hospital, Boston, with Shields Warren.

Charles N. Remy (Ph.D., State University of New York, 1952)
Biosynthesis of nucleotides—Massachusetts Institute of Technology, with John M. Buchanan.

Claud S. Rupert (Ph.D., Johns Hopkins University, 1950)
Development of methods for the study of living cells with infrared microspectroscopy—Johns Hopkins University, with Frank Brink.

Bernard Shapiro (M.D., University of Pennsylvania, 1951)
A study of the formation of coenzyme A in microorganisms—Norsk Hydro's Institute, Oslo, Norway, with Lorentz Eldjarn.

David B. Slautterback (Ph.D., Cornell University Medical College, 1952)
Proteolytic activity of the microsome fraction from neoplastic tissue—New York University, with Donal Sheehan.

Jacob Straus (Ph.D., University of Michigan, 1953)
The relationship of pigment formation to the growth of maize endosperm *in vitro*—Harvard University, with Kenneth V. Thimann.

Morton M. Weber (Ph.D., Johns Hopkins University, 1953)
Study of enzymatic mechanisms in the genus clostridium—Johns Hopkins University, with Nathan O. Kaplan.

Emile Eugene Werk, Jr. (M.D., University of Cincinnati, 1946)
Studies on ketone metabolism in man—Duke University, with Frank L. Engel.

Thomas H. Wood (Ph.D., University of Chicago, 1953)
Additivity studies of anoxia and chemical protection in simple x-irradiated systems—University of California, with Cornelius A. Tobias.

British-American Exchange Fellows

Cecil F. Baxter (M.D., Harvard Medical School, 1943)
The study of fluid and electrolyte balance and renal function correlated with clinical history and findings in patients with cancer admitted to the Royal Cancer Hospital before, during, and after treatment with radiotherapy—Royal Cancer Hospital, London, England, with D. W. Smithers.

Jay S. Roth (Ph.D., Purdue University, 1944)
Determination of the function of intracellular nucleases—Strangeways Laboratory, Cambridge, England, with Michael Webb.

SCHOLAR GRANTS IN SUPPORT OF CANCER RESEARCH

In addition to the forty-nine fellowship awards reported on page 43, the American Cancer Society, upon recommendation of the Committee on Growth, has awarded six scholar grants to help promising scientists who have recently completed their training to establish themselves in their careers as cancer investigators. These grants provide $6,000 annually for a period of three years to the institution at which the scholar elects to carry on his research. The following scholars have been appointed and will work at the institutions indicated:

Mahlon B. Hoagland (M.D., Harvard Medical School, 1948)
Medical Laboratories of the Huntington Memorial Hospital, Harvard University, at the Massachusetts General Hospital.

Alvin F. Rieck (Ph.D., Princeton University, 1952)
Department of Physiology, Marquette University School of Medicine.

David A. Salzberg (Ph.D., Stanford University, 1950)
Palo Alto Medical Research Foundation.

Avery A. Sandberg (M.D., Wayne University College of Medicine, 1946)
Department of Medicine, University of Utah College of Medicine.

Charles Donald West (M.D., University of Utah, 1944; Ph.D., University of Utah, 1950)
Sloan-Kettering Institute for Cancer Research, New York City.

Bernard Zimmermann (M.D., Harvard Medical School, 1945; Ph.D., University of Minnesota, 1948)
Department of Surgery, University of Minnesota Medical School.

FELLOWSHIPS IN THE MEDICAL SCIENCES

The Medical Fellowship Board of the Division of Medical Sciences has administered postdoctoral fellowships in the medical sciences for the Rockefeller Foundation for thirty-one years. It has also served the Foundation in the award of Welch Fellowships in Internal Medicine since 1940. Three years ago the National Tuberculosis Association initiated a series of fellowships in tuberculosis, and two years ago the program of the Board was augmented by a grant from the Lilly Research Laboratories.

At the annual meeting of the Board in March, 1953, eighteen appointments were made for the academic year 1953–1954. In addition, a Welch Fellowship awarded in 1951 will continue during the coming year. The following list of nineteen appointees indicates the institution from which the recipients received the doctorate, as well as the nature and location of their fellowship research:

Welch Fellowship in Internal Medicine

George J. Gabuzda, Jr. (M.D., Harvard Medical School, 1944)
Research program and location to be determined.

Fellowships in the Medical Sciences Administered for Rockefeller Foundation

Jack Barrow (M.D., Washington University Medical School, St. Louis, 1946)
Phagocytosis by leucocytes and/or reticuloendothelial cells and the relationship of these phenomena to the pathogenesis of fever—Washington University, St. Louis, with W. Barry Wood.

Alice Bronfenbrenner (M.D., University of Washington, Seattle, 1950)
Research program to be determined—Carlsberg Laboratory, Copenhagen, Denmark, with Kaj Linderstrøm-Lang.

Paul H. Gerst (M.D., College of Physicians and Surgeons, 1952)
Relationship of arterial pressure pulses to cardiac output—University of Pennsylvania, with Lysle H. Peterson.

Sheldon B. Gertner (Ph.D., Candidate, Yale University, 1953)
Ganglionic blockade—National Institute for Medical Research, London, with William Feldberg.

Donald W. Kupke (Ph.D., Stanford University, 1952)
Characterization of the salt-soluble fraction in nonfibrous desoxypentose-nucleoprotein preparations—Institute for Physical Chemistry, University of Uppsala, Sweden, with Kai O. Pedersen.

Irving Lyon (Ph.D., University of California, 1952)
Lipogenesis from various radio-C_2 donors—Harvard School of Public Health, with F. J. Stare and R. P. Geyer.

Orlando J. Miller (M.D., Yale Medical School, 1950)
a) Hormonal imbalances in the production and modification of ovarian tumors; *b*) separation of a hypervolemogenic factor present in ovarian-tumor-bearing mice—Yale University, with William U. Gardner.

Hans W. Neuberg (M.D., College of Physicians and Surgeons, 1950)
The effect of 2-4 dinitrophenol on aerobic phosphorylation and tissue respiration, as studied with rabbit liver mitochondria—Presbyterian Hospital, New York City, with Gilbert H. Mudge.

Sholem Postel (M.D., University of Illinois, 1950)
The relationship between concentration and rate of utilization of thyroid hormone—Massachusetts General Hospital, with John B. Stanbury.

Norman J. Selverstone (M.D., Harvard Medical School, 1947)
Research program and location to be determined.

Gordon M. Tener (Ph.D., Candidate, University of Wisconsin, 1953)
Chemistry of bacterial lipids—Institut de Biologie Physico-Chimique, Paris, with E. Lederer.

Fellowships in the Medical Sciences Administered for Lilly Research Laboratories

Dorothy Jean Buchanan (Ph.D., University of Cincinnati, 1951)
Study of the blood-group-specific substances through the products of various methods of degradation—Lister Institute of Preventive Medicine, University of London, with W. T. J. Morgan.

Gaylord M. Conzelman, Jr. (Ph.D., Candidate, George Washington University, 1953)
Metabolic Products of 8-aminoquinolines—Christ Hospital Institute of Medical Research, Cincinnati, with Leon H. Schmidt.

Arnold A. Lear (M.D., Harvard Medical School, 1950)
Studies on pernicious anemia: *1*) vitamin B_{12} metabolism, 2) evaluation of completeness of vitamin B_{12} therapy—Thorndike Memorial Laboratory, with William B. Castle.

George M. Sisson (Ph.D., University of Rochester, 1952)
a) Effect of proprioceptor depressor neurotomy on erythrocyte production. *b*) The hematopoietic factor in hemoglobin destruction—Columbia University, with Magnus I. Gregersen and W. S. Root.

Martha Vaughan (M.D., Yale Medical School, 1949)
1) The incorporation of glycine into insulin, 2) the inactivation of insulin by a factor present in animal tissue—National Heart Institute, with Christian B. Anfinsen.

Fellowships in Tuberculosis

Arthur M. Dannenberg, Jr. (M.D., Harvard Medical School, 1947; Ph.D., University of Pennsylvania, 1952)
The characterization of some of the proteolytic enzymes of animal tissues—University of Utah, with Emil L. Smith.

Richard H. Shepard (M.D., Johns Hopkins University, 1946)
Estimation of oxygen tension in whole blood and its application to assessment of pulmonary function—Johns Hopkins University, with Joseph L. Lilienthal, Jr.

FELLOWSHIPS IN ELECTRONICS

The Fellowship Office of the National Academy of Sciences–National Research Council has announced the award of four predoctoral fellowships in electronics for 1953–54. These fellowships are supported by the Radio Corporation of America.

The following list of appointees indicates the institution from which the recipient received his degree and the nature and location of his fellowship research:

George Street Bahrs (B.S., 1952, Stanford University)
Lumped-element circuit theory—Stanford University, with Joseph M. Pettit.

Charles Wilson Hoover, Jr. (M.S., 1951, Yale University)
Construction of proton linear accelerator and application to the study of photonuclear reactions; application of digital computing machine techniques to design and construction of a neutron velocity spectrometer—Yale University, with H. L. Schultz.

Gladwyn Vaile Lago (M.S., 1949, Purdue University)
Stability study of feedback systems that contain a time delay element—Purdue University, with John G. Truxal.

John Bowman Thomas (B.S., 1952, Johns Hopkins University)
Network synthesis—Stanford University, with David F. Tuttle.

FULBRIGHT OPPORTUNITIES

Competition for the United States Government grants under the Fulbright Act for the academic year 1954–55 will be announced in July for the following countries: Austria, Belgium and Luxembourg, Denmark, Egypt, Finland, France, Germany, Greece, Iraq, Italy, Japan, the Netherlands, Norway, Pakistan, Sweden, and the United Kingdom and colonial dependencies. These grants will be for university lecturing and postdoctoral research.

The closing date for making application is October 15, 1953. Requests for application forms and for detailed information regarding specific opportunities in the countries listed should be addressed to the Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington, D. C.

FELLOWSHIPS IN THE NATURAL SCIENCES

Twenty-one postdoctoral fellowships in the natural sciences have been awarded for 1953–54. These fellowships are supported by the Rockefeller Foundation, Merck and Company, Inc., and Lilly Research Laboratories and administered by the National Academy of Sciences–National Research Council. The following list indicates the institution from which the recipient received his degree as well as the nature and location of his fellowship research:

National Research Council Postdoctoral Fellows Supported by Rockefeller Foundation

Stephan Alexander Berko (to receive Ph.D. in June, 1953, University of Virginia)
Scattering of high energy positrons in magnetized iron; polarization of electrons using photoelectric effect in iron–Palmer Physical Laboratory, Princeton University, with E. P. Wigner.

Paul Walter Berg (to receive Ph.D. in June, 1953, New York University)
Free boundary problems for compressible fluids –Stanford University, with Charles Loewner.

Joseph Bruce Griffing (Ph.D., 1948, Iowa State College)
Study and the conducting of research in the field of quantitative inheritance, emphasizing particularly statistical techniques–Cambridge University, with Ronald A. Fisher.

Lionel Francis Jaffe (to receive Ph.D. in June, 1953, California Institute of Technology)
Development of polarity in the fucales egg in the light of a CO^2 gradient hypothesis–Hopkins Marine Station, Stanford University, with Lawrence Blinks.

Rolf Werner Juhle (to receive Ph.D. in June or September, 1953, Johns Hopkins University)
Regional integration of the geology, vulcanology, and seismology of Alaska and the Aleutian Islands–University of California, with John Verhoogen.

Arthur Kent Kerman (to receive Ph.D. in June, 1953, Massachusetts Institute of Technology)
Investigation of the approximations used with Bohr's nuclear surface wave model–California Institute of Technology, with Robert F. Christy.

Frederic Middlebrook Richards (Ph.D., 1952, Harvard University)
Physical chemistry of proteins with special reference to those aspects leading to interpretation of fine structure–Carlsberg Laboratory, Copenhagen, Denmark, with K. Linderstrøm-Lang.

Zevi Walter Salsburg (to receive Ph.D. in June, 1953, Yale University)
Molecular theory of liquid helium II–Institute for Theoretical Physics, University of Amsterdam, Netherlands, with J. DeBoer.

Edgar William Warnhoff (to receive Ph.D. in June, 1953, University of Wisconsin)
Synthesis of cyclohept [f] indene–University of London, with H. R. Barton.

Joe Lloyd White (Ph.D., 1947, University of Wisconsin)
Reactions of clays with molten salts–Rothamsted Experimental Station, Harpenden, Herts, England, with D. M. C. MacEwan.

William North White (to receive Ph.D. in June, 1953, Harvard University)
Reactivity of small ring compounds and the course of molecular rearrangements–California Institute of Technology, with John D. Roberts.

Donald Gordon Higman (Ph.D., 1952, University of Illinois)
Mathematics–the splitting problem for groups–McGill University, with Hans Zassenhaus.

Merck Senior Postdoctoral Fellows

Paul James Allen (Ph.D., 1941, University of California)
Study of metabolism and enzymes in relation to obligate parasitism–Sheffield University, England, with Hans A. Krebs.

Donald Hartwell Bucklin (Ph.D., 1952, Washington University)
Embryological and physiological study of the phenomenon of diapause in insect embryos–Biological Laboratories, Harvard University, with Carroll M. Williams.

Edward William Fager (Ph.D., 1942, Yale University)
Quantitative study of the succession of animal communities in logs–Bureau of Animal Population, Oxford University, England, with Charles Elton.

Morgan Harris (Ph.D., 1941, University of California)
Adaptive variation in animal cells–Institut Pasteur, Paris, France, with Jacques Monod and the laboratory of Boris Ephrussi, University of Paris.

Robert Guy Parrish (Ph.D., 1952, Duke University)
Study of enzymatic properties, structural basis of protein molecule, and its relation to biological function–Cavendish Laboratory, Cambridge University, England, with J. C. Kendrew.

Lilly Postdoctoral Fellows

Howard Marvin Dintzis (Ph.D., March, 1953, Harvard University)
Physical chemical studies on protein and protein interactions–Yale University, with John G. Kirkwood.

Duane Tolbert Gish (to receive Ph.D. in June, 1953, University of California)
Structure and synthesis of the oxytoxic and vasopressor hormones–Cornell University Medical College, with Vincent du Vigneaud.

David Swenson Hogness (Ph.D., 1952, California Institute of Technology)
Study of the induction of melibiase (the enzyme which catalyzes the hydrolysis of melibiose (6-glucose-x-d-galactoside)) in bacteria–Institut Pasteur, Paris, France, with Jacques Monod.

Howard Elliot Zimmerman (to receive Ph.D. in June, 1953, Yale University)
Stereochemistry of beta-hydroxyacids–Harvard University, with Robert B. Woodward.

INTERNATIONAL RELATIONS

INTERNATIONAL COMMISSION OF OPTICS

The Third Congress of the International Commission of Optics was held in Madrid, April 20–21, with delegates present from Belgium, France, Germany, Great Britain, Japan, the Netherlands, Spain, Sweden, and the United States. (For list of United States delegates to the meeting, see "Representation at International Meetings" in this issue of NEWS REPORT.)

Reports on conventions and symbols used in optics, methods used in preparing designs for optical apparatus, and light sources were presented at the Congress. Certain of the recommendations contained in these reports were approved by the delegates present but will not be announced as official recommendations of the Commission until the end of a six-month period during which the several national committees may register objections.

The following officers were elected to serve until the Fourth Congress: A. C. S. van Heel (Netherlands), *President;* Stanley S. Ballard (United States), E. Ingelstam (Sweden), and J. Otero (Spain), *Vice-Presidents;* W. D. Wright (Great Britain), *Secretary;* and A. Arnulf (France), *Treasurer.*

Immediately preceding the Congress, and in celebration of the fiftieth anniversary of the founding of the Real Sociedad Española de Fisica y Quimica, a colloquium on "Optical Problems in Vision" was held in Madrid. Papers were presented on the following subjects: Binocular Vision with Feeble Excitation; Further Studies of Visual Mechanisms by the Two-Color Threshold Method; Research on Chromatic Vision by Electrophysiological Means; Chemical Basis of Visual Excitation; and other optical problems in vision, such as optical instruments, Stiles-Crawford effect, absolute threshold, pupil size, visual pigments, accommodation, convergence, aberrations, opthalmoscopy, retinal photography, absolute chromatic threshold, and color blindness.

INTERNATIONAL GEOPHYSICAL YEAR 1957–58

The United States National Committee for the International Geophysical Year, established in March, 1953 by the National Academy of Sciences–National Research Council (see March-April issue of NEWS REPORT) has received a grant of $5,000 from the National Science Foundation to support its activities during the current year. The Committee already has held two meetings and has prepared a draft program of geophysical observations to be carried out by United States scientists in 1957–58. This draft program has been sent to the International Committee for the Geophysical Year for coordination with programs suggested by other participating countries.

According to the present schedule, the International Committee will meet in Brussels, June 30–July 4, to prepare a preliminary coordinated program which will then be sent to all national committees for comment. On or before March 1, 1954, the United States National Committee will submit to the International Committee a revised program outlining in some detail the work which the United States proposes to carry out in support of the international program. By the middle of 1954, the United States and other participating countries should have a fairly clear idea of the scope of the program for 1957–58 and be able to proceed with preparations.

Joseph Kaplan, Chairman of the United States National Committee, has accepted an invitation to attend the forthcoming meeting of the International Committee in Brussels. Following this meeting, Dr. Kaplan will remain in Brussels for approximately two weeks to develop plans for effective coordination of United States participation in the Geophysical Year program. Wallace W. Atwood, Jr., Director of the Office of International Relations, and J. Wallace Joyce, Deputy Science Adviser, Department of State, will attend the Brussels meeting with Dr. Kaplan.

REPRESENTATION AT INTERNATIONAL MEETINGS

Since January 1 of this year, the Chairman of the National Research Council has recommended to the Secretary of State that the United States be officially represented at nine different international scientific meetings scheduled for 1953. In each instance, the Chairman has acted in response to a request for Academy–Research Council opinion on the desirability of United States participation in the meetings under consideration. A total of 48 United States scientists have been nominated to serve on the delegations to these meetings.

Although appointments have not been completed as of this date, it is anticipated that the United States will be officially represented at the following meetings (composition of the delegations will be announced in subsequent issues of NEWS REPORT):

Meeting of Directors of National Research Councils called by UNESCO, Paris, July 6–7

Seventeenth Conference of the International Union of Pure and Applied Chemistry, Stockholm and Uppsala, Sweden, July 29–August 7

Fourteenth International Congress of Zoology, Copenhagen, August 5–12

Eleventh General Assembly of the International Union of Biological Sciences, Nice, August 18–21

Twelfth International Congress on Limnology, Cambridge, England, August 20–30

Ninth International Congress of Genetics, Bellagio, Italy, August 24–31

Sixth International Congress of Microbiology, Rome, September 1–5

Fourth International Congress on the Quaternary, Rome and Pisa, September 1–12

Eighth Pacific Science Congress, Quezon City, Manila, Los Baños, and Baguio, The Philippines, November 16–28.

In addition to the above meetings for which official delegations have been recommended, there are several for which National Research Council representatives have been designated. They are the following:

Third International Commission of Optics, Madrid, April 20-21

Brian O'Brien, American Optical Company; Wallace R. Brode, National Bureau of Standards; Deane B. Judd, National Bureau of Standards; Irvine C. Gardner, National Bureau of Standards; Stanley S. Ballard, Tufts College.

Thirteenth International Congress of Pure and Applied Chemistry, Stockholm and Uppsala, Sweden, July 29-August 7

S. E. Q. Ashley, General Electric Company; Jacob Bigeleisen, Brookhaven National Laboratory; Wallace R. Brode, National Bureau of Standards; Charles D. Coryell, Massachusetts Institute of Technology; John T. Edsall, Harvard University; Per K. Frolich, Merck & Company, Inc.; E. C. Gilbert, Oregon State College; Joel Hildebrand, University of California; H. A. Laitinen, University of Illinois; J. M. Luck, Stanford University; Harold P. Lundgren, U. S. Department of Agriculture Western Regional Research Laboratory; H. S. Nutting, The Dow Chemical Company; Emil Ott, Hercules Powder Company; Kenneth S. Pitzer, University of California; Edward J. Prosen, National Bureau of Standards; Frederick D. Rossini, Carnegie Institute of Technology; G. T. Seaborg, University of California; F. D. Snell, Chemists Engineers; H. S. Taylor, Princeton University; F. D. Tuemmler, Shell Development Company; Guy Waddington, U. S. Bureau of Mines; T. F. Young, University of Chicago.

Third International Congress of Biometrics, Bellagio, Italy, September 1-5

H. G. Batson, Department of Public Health, Chicago; Gertrude Cox, North Carolina State College.

Eighth International Congress of Rheumatic Diseases, Geneva, Switzerland, August 24-28

Robert L. Levy, College of Physicians and Surgeons, Columbia University.

Fifth International Congress of Tropical Medicine and Malaria, Istanbul, August 28-September 4

Leon Schmidt, Christ Hospital, Cincinnati; Alf S. Alving, University of Chicago.

INTERNATIONAL PHYSIOLOGICAL CONGRESS

The Nineteenth International Physiological Congress will be held in Montreal, August 31–September 4. The program will include papers in physiology, biochemistry, pharmacology, and closely allied disciplines. The subject matter will be physiological in the widest sense, as has been the tradition of the International Physiological Congress.

The scientific sessions and symposia will be held at McGill University and the University of Montreal. Symposium topics include the following: Physiological Theories of Learning, Haemodynamics in Small Vessels, Physiology of Cold, Mechanism of Formation of the Thyroid Hormone, Metabolic Influence of Insulin, Postural Mechanisms, and Reflexes from the Cardiac and

Pulmonary Areas. Abstracts of all papers accepted for presentation at the Congress will be printed in a single volume, to be distributed to members at registration.

To assist Congress participants who will visit the United States either before or after the Congress in Montreal, the Department of State has established an Exchange-Visitor Program and designated the American Physiological Society as sponsor. In its capacity as sponsor, the Society is aiding in arranging temporary research, lecturing, and consulting engagements for visiting scientists in the fields of physiology, biophysics, pharmacology, biochemistry, and related fields at various American educational institutions and laboratories. Anyone wishing to invite a foreign member of the Congress to his institution and who has available a supporting honorarium, or can provide travel expenses, should send a specific invitation to the individual concerned. When the same person is desired by neighboring universities or institutions, a suitable collective itinerary and invitation might be arranged.

A list of the foreign scientists already invited to participate in the Exchange-Visitor Program with the dates of their itineraries can be secured from E. M. Landis, Harvard Medical School, 25 Shattuck Street, Boston 15, Mass. Dr. Landis is chairman of the committee of the Federation of American Societies for Experimental Biology which is aiding in arranging for the Congress.

RECORD OF MEETINGS

March

2	Subcommittee on Nuclear Geophysics
5	Committee on Wool-Type Fabrics and Blends, *New York City*
6	Committee on Foot Protection, *New York City*
	Committee on Photobiology
	Committee on Spectral Absorption Data, *Pittsburgh, Pa.*
	Nickel Conservation Panel
6–7	Committee on Disaster Studies
9	Kyanite and Mullite Panel, *New York City*
10	Conference on Biological Education
12	Lateritic Ores Panel, *New York City*
16	Phosphate Slime Panel, *Lakeland, Fla.*
17–19	Conference on Mitogenesis and Morphogenesis, *Austin, Tex.*
19	Joint Planning Committee of National Research Council and Social Science Research Council for Conference on Area Research in Contemporary Africa, *New York City*
20	Nickel Conservation Panel
	RCA Fellowship Board in Electronics
23	American Geological Institute, Board of Directors, *Houston, Tex.*
24	Division of Physical Sciences, Executive Committee
25	Ad hoc Committee on Military Bioclimatology
26	Committee on Fabrics for Body Armor
26–27	U. S. National Committee, International Geophysical Year
27	Subcommittee on Cereal and Baked Products, *St. Paul, Minn.*
31–April 1	Canned Meat Symposium, *Chicago, Ill.*

April

2	American Institute of Biological Sciences, Publications Committee
4	Advisory Committee in Biochemistry, *Madison, Wis.*
6	Subcommittee on Nutrition, *Chicago Ill.*
6–7	Commission on Human Resources and Advanced Training, *Ann Arbor, Mich.*
7	Committee on Globes (Construction and Use of Precise Globes and Spherical Maps)
	Committee on Basic Research, Advisory to Office of Ordnance Research
8	Graphite Panel
9	Committee on Training and Research in Applied Mathematics
10	Joint Planning Committee of National Research Council and Social Science Research Council for Conference on Area Research in Contemporary Africa, *New York City*
11	Advisory Committee in Physiology, *Chicago, Ill.*
	Policy Committee, Office of International Relations

14	Sponsors, Committee on Handbook of Biological Data
17	Subcommittee on Dairy, Oils and Fat Products, *Chicago, Ill.*
21	Committee on Flame and Thermal Protective Combat Clothing, *Philadelphia, Pa.*
22	Conference on the Importance of Systematics in Biological Research
23	American Institute of Biological Sciences, Annual Meeting of Governing Board
	Committee on Wool-Type Fabrics and Blends, *New York City*
	Division of Biology and Agriculture, Executive Committee
24	Division of Biology and Agriculture, Annual Meeting
25	Committee on Handbook of Biological Data, Executive Committee
27	Advisory Committee on Scientific Personnel
27–29	National Academy of Sciences, Annual Meeting
27–30	U. S. National Committee, International Scientific Radio Union
28–29	Committee on Packing, Packaging, and Preservation, and subcommittees, *Chicago, Ill.*
30	Subcommittee on Operations Research in Highway Safety

NEW PUBLICATIONS

Atlas of Tumor Pathology. Section IV, Fasc. 14, *Tumors of the Thyroid Gland,* by Shields Warran and William A. Meissner. 1953. 97 p. $1.75. Section VIII, Fasc. 31b and 32, *Tumors of the Male Sex Organs,* by Frank J. Dixon and Robert A. Moore. 1952. 179 p. $1.50. Washington, Armed Forces Institute of Pathology.

Atoll Research Bulletin. Pacific Science Board. National Research Council. Nos. 15, 16. 1953. 28 p., 68 p.

Bacteriostatic Activity of 3,500 Organic Compounds for Mycobacterium Tuberculosis Var. Hominis, by Guy P. Youmans, Leonard Doub, and Anne S. Youmans. Chemical–Biological Coordination Center Review No. 4. 1953. 713 p. $5.00.

Conference on Electrical Insulation, Annual Report, 1952. 1953. 61 p. $3.00.

Distribution of Load Stresses in Highway Bridges. Highway Research Report No. 14-B. Academy–Council Publication No. 253. 1953. 90 p. $1.50.

Highway Materials Surveys. Highway Research Board Bulletin No. 62. Academy–Council Publication No. 247. 1953. 118 p. $1.50.

Highway Planning and Urban Development. Highway Research Board Bulletin No. 64. Academy–Council Publication No. 249. 14 p. $0.30.

Intergovernmental Relationships in Highway Affairs. Highway Research Board Bulletin No. 66. Academy–Council Publication No. 255. 1953. 18 p. $0.30.

Mapping and Subsurface Exploration for Engineering Purposes. Highway Research Board Bulletin No. 65. Academy–Council Publication No. 252. 60 p. $0.90.

Resealing Joints and Cracks in Concrete Pavements (Minnesota). Highway Research Board Bulletin No. 63. Academy–Council Publication No. 248. 22 p. $0.45.

Sanitary Milk Control and Its Relation to the Sanitary, Nutritive, and Other Qualities of Milk, by A. C. Dahlberg, H. S. Adams and M. E. Held. Academy–Council Publication No. 250. 1953. 174 p. Free.

United States Government Grants under the Fulbright Act: Lecturing, 1953-54, Germany and Finland; Regular Programs, 1954-55, Southeast Asia and the Pacific, Union of South Africa. 34 p. Free.

Notice of Academy Meetings

NATIONAL ACADEMY OF SCIENCES

Autumn Meeting, Massachusetts Institute of Technology, November 9-11

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., June 21

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